

Musculoskeletal Anatomy in Greek Sculpture 5 Studies



By Joan Lehning

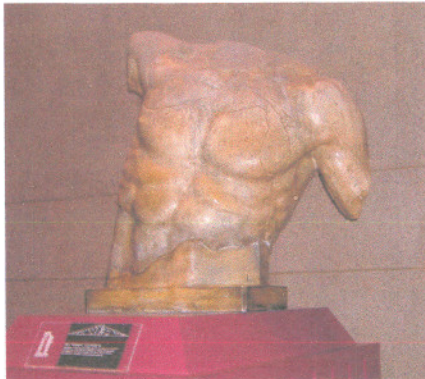
Musculoskeletal Anatomy in Greek Sculpture

5 Studies

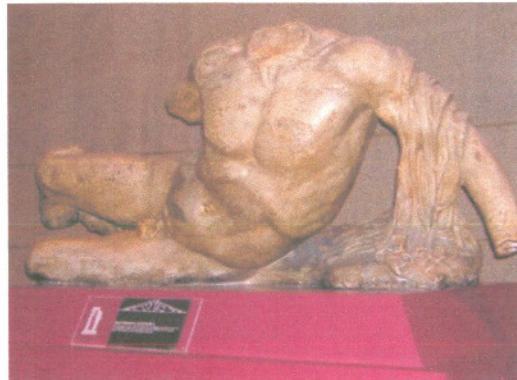
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The purpose of this study is to help artists develop an understanding of the underlying anatomic structure that determines the visible form of the human body. In this study three different Elgin plaster casts will be utilized to demonstrate the relationship between the visible contours created by the sculptor and the underlying musculoskeletal structures.

The three Elgin plaster casts to be used in this study are:



The torso of Poseidon
West Pediment
Sculpture M



The reclining male
West Pediment
Sculpture A

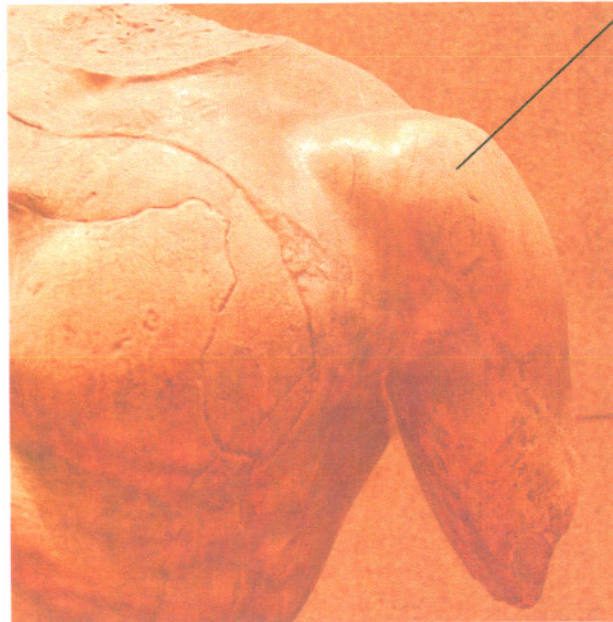
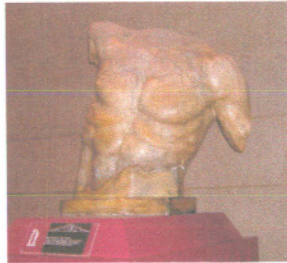


The reclining Dionysus
East Pediment
Sculpture D

#1 Shoulder Musculature

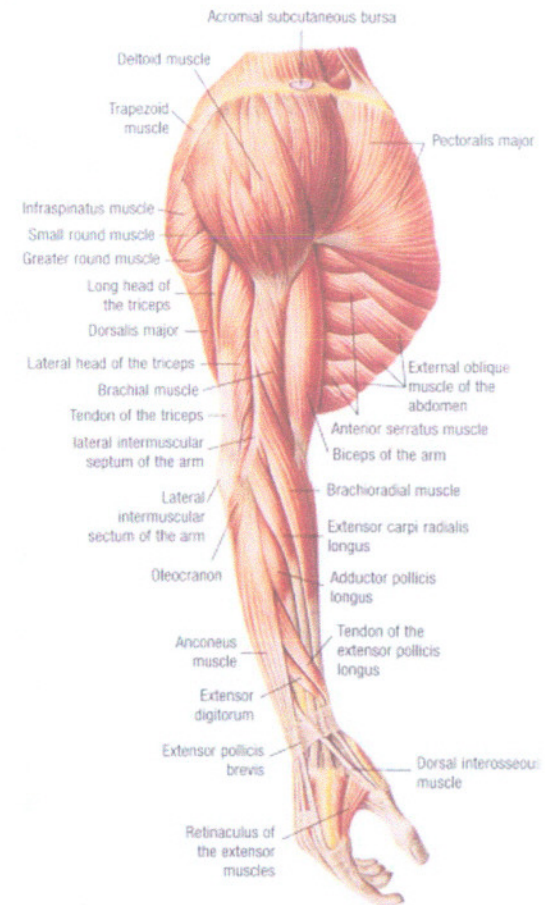
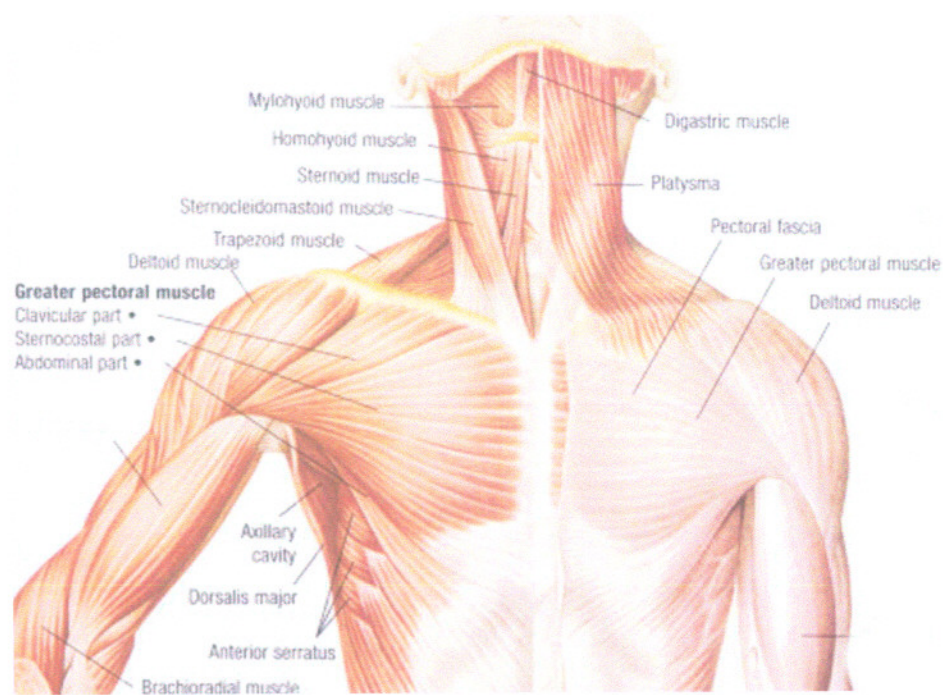
Torso of Poseidon

For this lesson you need to find the torso of Poseidon. It is Sculpture M of the West Pediment.

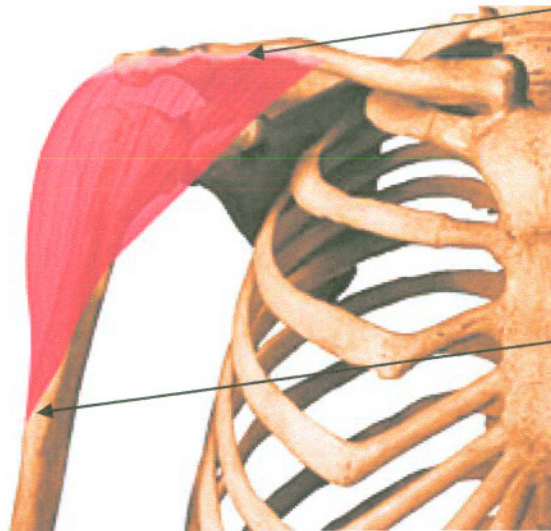


Notice the muscle in the upper arm. Using the anatomical diagrams on the next page, see if you can identify and name the muscle.

Based on the diagrams below, what muscle do you think the sculptor is portraying in the upper arm?



The muscle in the upper arm of the Poseidon statue is the deltoid. Here is another illustration of the deltoid muscle shown isolated from the surrounding muscles.



Note that the anterior portion of the deltoid originates from the clavicle (the collar bone).

The deltoid muscle inserts into the humerus bone of the upper arm.

Now take a look at the way the muscle looks on a real human being.



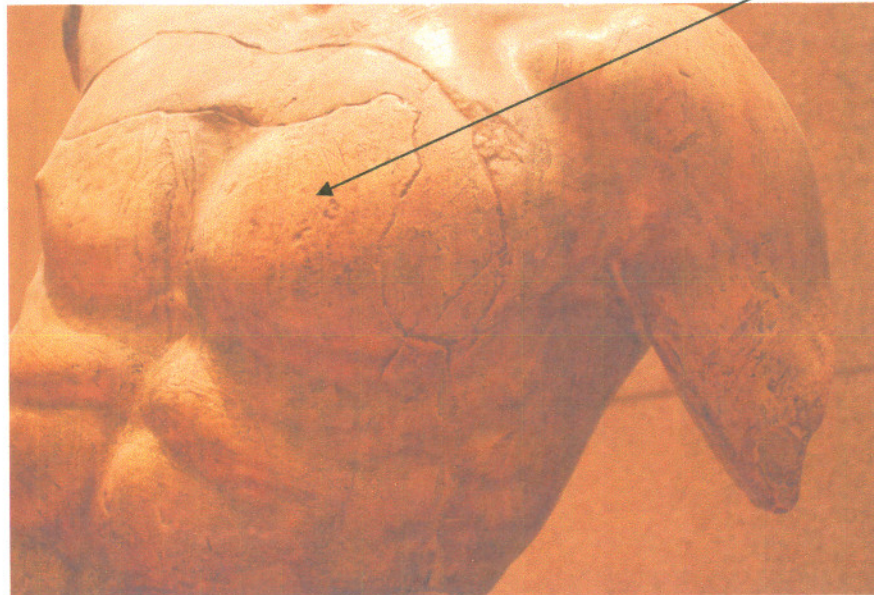
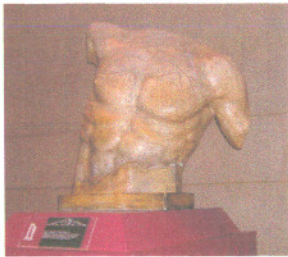
This is the way the contour of the deltoid can be sketched by an artist. Perhaps you would like to try sketching the shoulder muscles of Poseidon!



#2 Chest Musculature

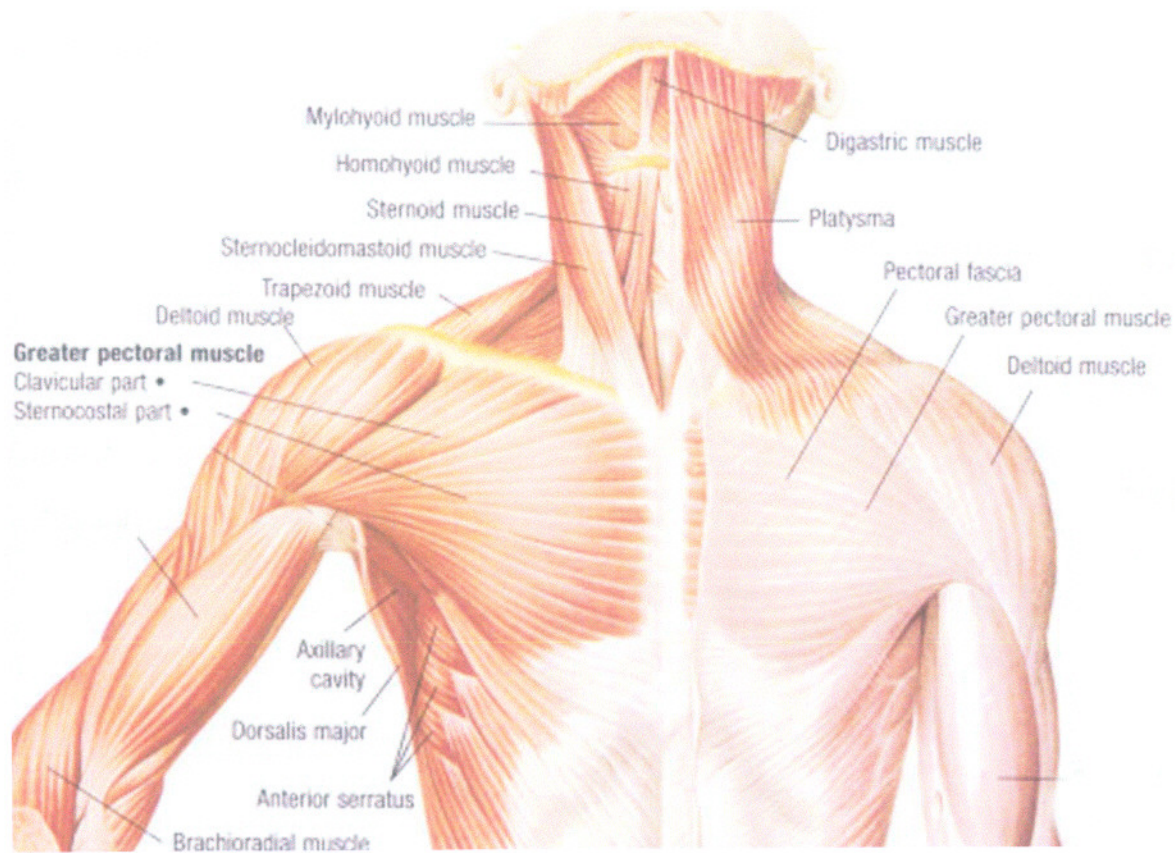
Torso of Poseidon

For this lesson you need to find the torso of Poseidon. It is Sculpture M of the West Pediment.

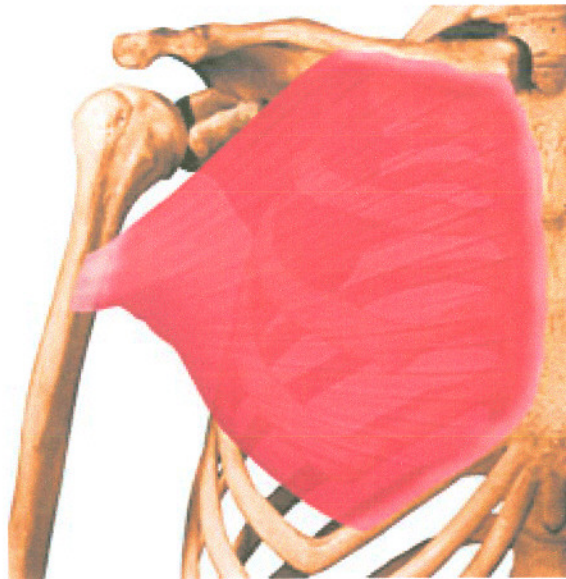


Notice the large muscle on each side of the chest. Using the anatomical diagram on the next page, see if you can identify and name this muscle.

Based on the diagram below, what muscle do you think the sculpture is trying to portray in the chest?



The muscle in the chest of the Poseidon statue is the greater pectoral muscle (also sometimes called pectoralis major). Here is another illustration of the greater pectoral muscle shown isolated from the surrounding muscles.



Note that some of the fibers of the greater pectoral muscle originate from the clavicle (collar bone) and other fibers originate from the sternum. The lower fibers of the greater pectoral muscle actually connect to a large tendon which is part of the abdominal muscles.

Now take a look at the way the pectoral muscles look on a real human being.



This is the way the contour of the pectoral muscle can be sketched by an artist. Perhaps you would like to try sketching the chest muscles of the Poseidon statue.



#3 Shoulder/Neck Region

Reclining Male

For this lesson you need to find the reclining male statue. It is Sculpture A of the West Pediment.

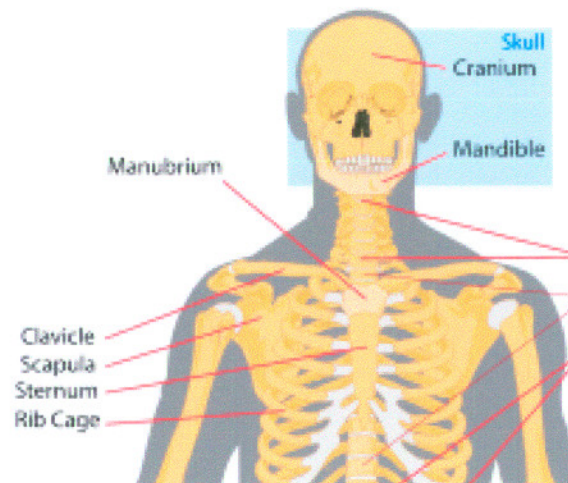
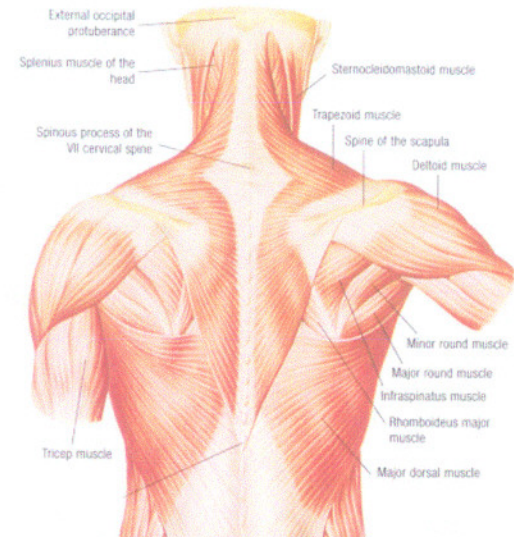
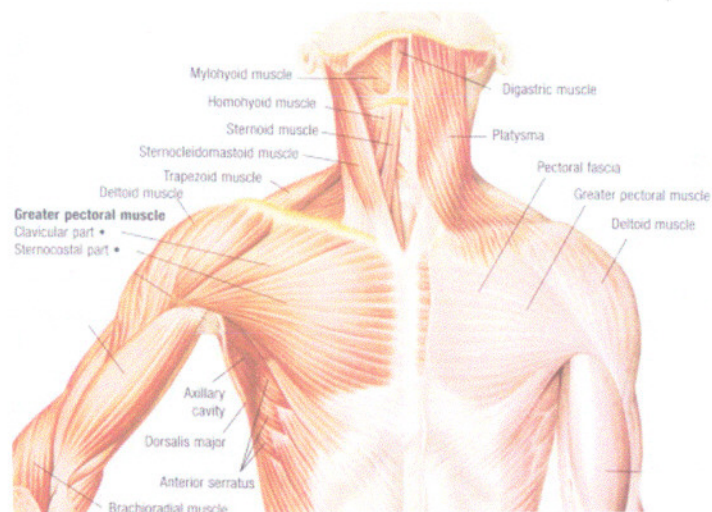


Notice the muscle in the upper portion of the shoulder, just beside the neck.

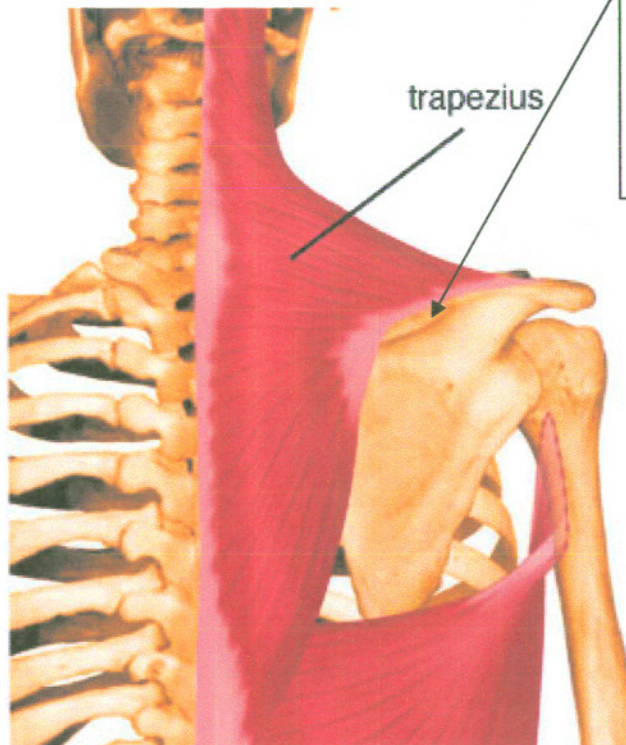


Notice also the bone that is right in front of this muscle. Using the anatomical diagrams on the next page, see if you can identify and name both the muscle and the bone.

Based on the diagrams below, what bone and muscle do you think the sculptor is trying to portray in the area between the shoulder and the neck?



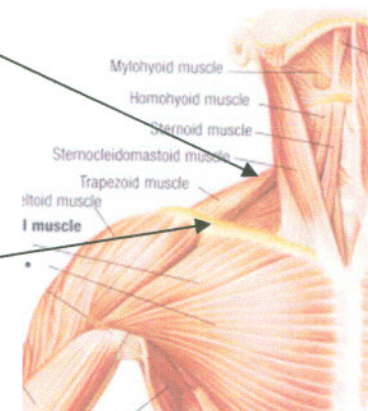
The muscle found in the region between the shoulder and neck is called the trapezoid (or the trapezius) muscle. The bone that runs diagonally between the neck and the shoulder on the anterior view is the clavicle.



This is a view of the trapezius or trapezoid muscle from the rear. Note that the muscle originates from the bones of the spine, and it connects to the large bony ridge on the shoulder blade.

The trapezoid muscle is located on the posterior portion of the body, but its contour can easily be seen from the front.

The clavicle is also clearly seen in the anterior view.



Now take a look at the way the trapezoid looks from different views on real bodybuilders.



From the front



From above



From the back



This is the way the contour of the clavicle and the trapezoid muscle can be sketched by an artist. Perhaps you would like to try sketching the shoulder/neck region of the reclining male statue.

#4. The Region around the Knee

Reclining Dionysus

For this lesson you will need to find the reclining Dionysus. It is sculpture D of the East Pediment.



In this study we will be looking at the structures around the knee. On the right knee of Dionysus notice the bone that is commonly referred to as the kneecap. Notice also the tendon that extends from the kneecap to the bone of the lower leg.



On the left knee of Dionysus notice the ridge of the bone that extends down the front of the lower leg.

In the diagrams on the next page, see if you can find the scientific name for the knee cap and the tendon connected to it. Also see if you can determine the name of the long bone that forms the bony ridge running down lower left leg of the Dionysus statue.

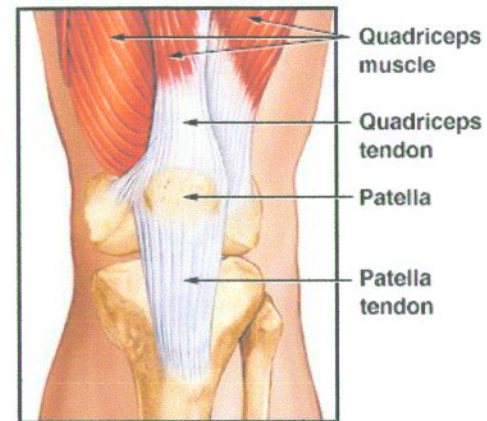
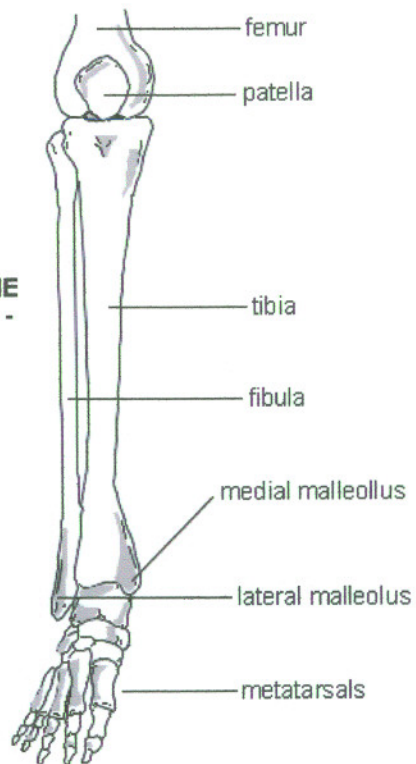
Based on the diagrams below, see if you can answer these questions:

What is the scientific name for the knee cap?

What is the name of the tendon that connects the knee cap to the lower leg bone?

What bone forms a bony ridge that runs down the front of the lower leg?

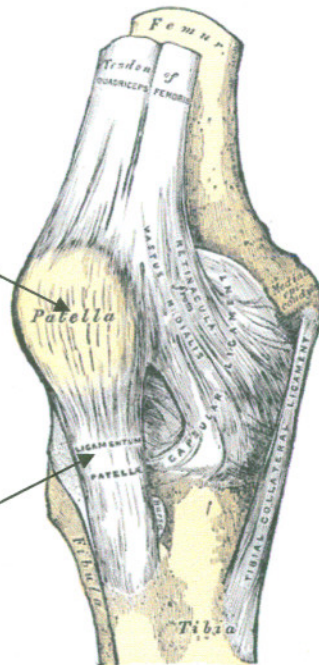
**BONES OF THE
LOWER LEG -
Front view**



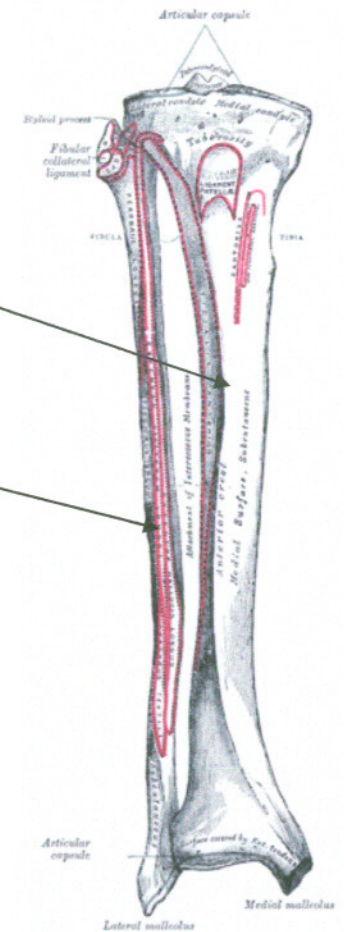
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The scientific name for the kneecap is the patella.

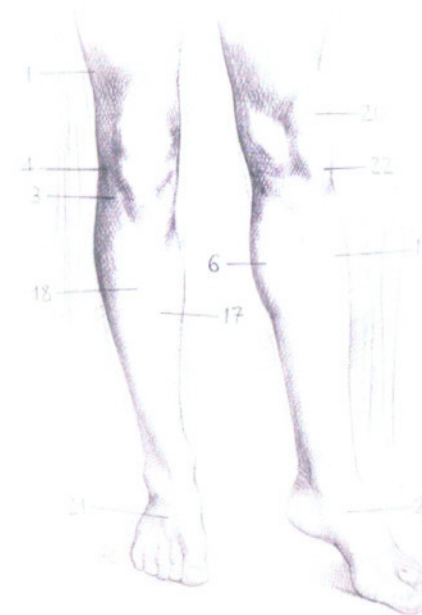
The tendon that connects the patella to the long bone of the lower leg is called the patellar tendon.



The long bone which forms a bony ridge running down the front of the lower leg is called the tibia. The other long bone of the lower leg is called the fibula. The fibula is not usually visible as a surface structure except at the ankle.



Now take a look at the way the structures around the knee look on these real athletes.



This is the way the structures around the knee can be sketched by an artist. Perhaps you would like to try sketching the structures around the knee of the Dionysus statue.

5. The Muscles of the Posterior Thigh - Reclining Dionysus



For this lesson you need to find the reclining Dionysus statue. It is Sculpture D of the East Pediment.

In this lesson we will be looking at the muscles of the posterior thigh as they narrow into tendons which run behind the knee and insert onto the tibia in the lower leg.

Notice the tendon on the inside of the right knee of the Dionysus statue



Notice also the tendon on the outside of the right knee of the Dionysus statue.

Using the anatomical diagrams on the next page, see if you can name the muscles which form these tendons on the inside and outside of the knee.

The thigh muscle which forms the tendon on the outside of the knee has two "heads."
Can you find the name of that muscle on the diagram below?

The tendons of several thigh muscles blend together on the inside of the knee. The two most posterior tendons are the most visible of these. Can you find the names of the muscles which form the two most posterior tendons on the inside of the knee?

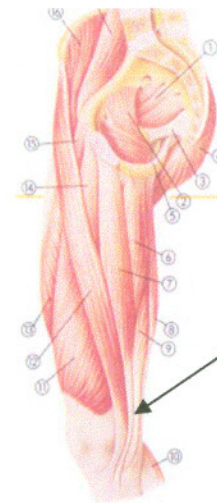
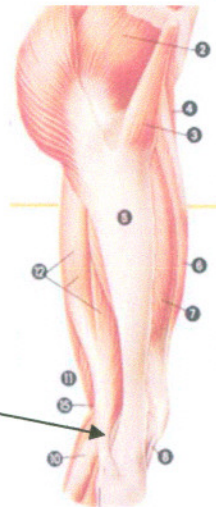
► Superficial muscles
of the right thigh

External lateral view:

- ① External oblique muscle of the abdomen;
- ② Gluteus medius;
- ③ Tensor of the fasciae latae;
- ④ Sartorius;
- ⑤ Iliotibial tract;
- ⑥ Rectus femoris;
- ⑦ Vastus lateralis;
- ⑧ Ligament of the patella;
- ⑨ Head of the tibia;
- ⑩ Gastrocnemius

Outside of the
right knee

- muscle;
- ⑪ Semimembranous muscle;
 - ⑫ Biceps of the femur;
 - ⑬ Gluteus maximus;
 - ⑭ Iliac crest
 - ⑮ Popliteal crest



Inside of the
right knee

Internal lateral view:

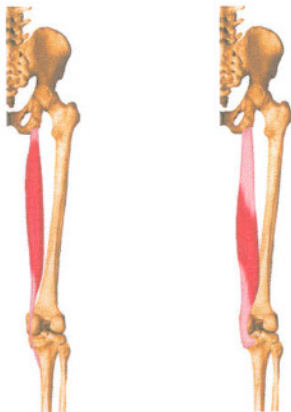
- ① Piriform muscle;
- ② Internal obturator muscle;
- ③ Sacrospinal ligament;
- ④ Gluteus maximus;
- ⑤ Sacrotuberous ligament;
- ⑥ Adductor magnus;

- ⑦ Gracilis muscle;
- ⑧ Semitendinous muscle;
- ⑨ Semimembranous muscle;
- ⑩ Gastrocnemius muscle;
- ⑪ Medial major muscle;
- ⑫ Sartorius muscle;
- ⑬ Rectus femoris;
- ⑭ Adductor longus;
- ⑮ Pectineal muscle;
- ⑯ Iliac muscle;
- ⑰ Psoas major

The thigh muscle with two heads which forms the tendon on the outside of the knee is the biceps of the femur, also referred to as the biceps femoris.

The two thigh muscles which form the tendons on the inside of the knee are the semitendinous and semimembranous muscles. These are also referred to as the Semitendinosus and semimembranosus muscles.

There is a common name which is used to refer to ALL the muscles listed above. Perhaps you have heard of the term "hamstrings." The biceps of the femur, the semitendinous and the semimembranous muscles make up what we collectively refer to as the hamstrings. The biceps of the femur is called the lateral hamstring because it is on the outside of the knee. The semimembranous and semitendinous muscles are called the medial hamstrings because they are on the inside of the knee.



The semimembranous and semitendinous muscles insert on the inside of the knee and are therefore known as the medial hamstrings.

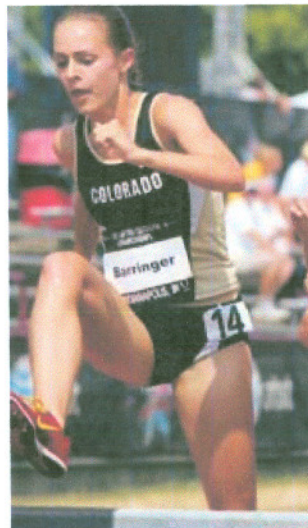


The two heads of the biceps of the femur insert on the outside of the knee and are therefore known as the lateral hamstrings.

Now take a look at the way the lateral hamstring (biceps of the femur) looks of a real runner,



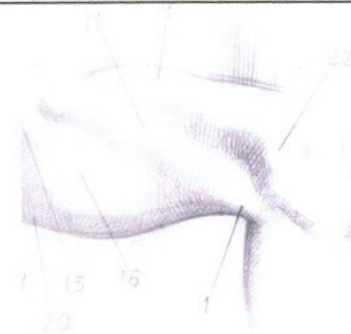
On this hurdler you can see the medial hamstrings



This is the way the lateral hamstring tendon might be sketched by an artist.

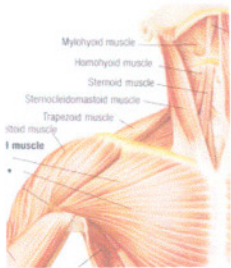


This is the way the medial hamstring tendon might be sketched by an artist.



Perhaps you would like to try to sketch the medial and lateral hamstring tendons on the statue of Dionysus.

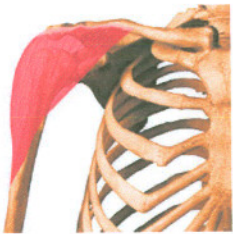
Credits



Atlas of Human Anatomy (2002). Giunti Editorial Group, Florence. Translation by Taj Books, limited.



Civardi, Giovanni (2001). *Drawing the Human Body; An Anatomical Guide*. New York: Sterling Publishing.



University of Washington School of Medicine, Department of Radiology website:
<http://www.rad.washington.edu/atlas2/>